

LETTER TO THE EDITOR

Rates of Growth of Human Cancers: Clinical Relevance

Dear Sir,

The fact that the tumor volume doubling time of pulmonary metastases can be a selection factor for the resection of metastatic melanoma as reported by Ollila et al. [1] is of no surprise. The relation of tumor volume doubling time to prognosis of many neoplasms, both primary and metastatic, has been well documented [2]. Nevertheless, quantifying benefit by the use of 5-year survival rates is statistically flawed. Friberg has correctly categorized the 5-year survival rate as "the myth that will not die" [3]. He gives the history of how it crept into use against the warnings of several great statisticians. He quotes Einstein's comment that it is easier to split an atom than kill a myth. A major reason for the biases in 5-year survival rates in cancer survivorship data lies in the reported fact that the tumor volume doubling times of most cancers form log normal frequency distributions [4].

Log normal frequency distributions are highly skewed. By selecting slower growing metastases for aggressive surgical ablation, one introduces a length bias to the case selection process and a lead time bias to the quantification of end results when fixed end-points, i.e., 5- and 10-year survival rates, are reported. A better way to report data is to calculate the force of mortality for the entire study population as Haybittle has done for the breast [5].

More detail with respect to human pulmonary metastases and other human cancers has been reviewed previously in this journal by Spratt et al. [6,7] and by Friberg [3]. Data on the relation between the tumor volume doubling time of pulmonary metastases from melanoma and

the variable duration of survival have also been reported before [8]. There could actually be a benefit to the authors' case selection process, but it is concealed by the various statistical biases mentioned. Of course, the best proof of benefit to correct for these biases would be a controlled clinical trial looking at reduction in the force of mortality.

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